

1. Problem Domain

- Insert a value into middle of array
- Shift other elements to fill gaps

2. Visual

$[2, 4, 14, 22], 8$

$[2, 4, \text{null}, 14, 22], 8$

↓
 $[2, 4, 8, 14, 22] = \text{Output}$

reverse it

$[2, 4, 8, 14, 22]$

$[2, 4, -, 14, 22]$ RM middle

Output = $[2, 4, 14, 22]$ // shift to fill null

3. insert Array:

- find mid index
- create new Arr + 1
- Copy 1st $\frac{1}{2}$
- Insert value
- Copy 2nd $\frac{1}{2}$

remove Array

- find mid index
- create new Arr - 1
- Copy 1st half
- Copy 2nd

4. Big O

insert array & remove array
iterates through the len of the
Arr once $n = \text{len Arr}$

Time: $O(n)$

The Arr is = to $n+1$
 $n-1$

Space: $O(n)$

5. fun insertShiftArray (arr, value):

midIndex = (len of arr + 1) / 2 //< find mid point

newArr = new arr of len (len of arr + 1)

Copy 1st half of arr to newArr

newArr[midIndex] = value

Copy 2nd half to where it's after midIndex

return newArr

fun removeShiftArray (arr):

midIndex = len of arr / 2

newArr = new array of len (len of arr - 1)

Copy 1st half of arr to newArr

Copy 2nd half of arr to newArr + 1

return newArr

Tests: in: [1, 2, 3, 4], 5
out: [1, 2, 3, 4, 5]

in [1, 2, 3, 4, 5]
out [1, 2, 4, 5]